

AMENDMENTS TO THE CLAIMS

1. (Currently amended) An apparatus comprising:

an elongated tubular outer shaft having a distal portion and a proximate portion;

an elongated tubular inner shaft slideable inside the outer shaft and having a distal portion adjacent to the outer shaft distal portion and a proximate portion adjacent to the outer shaft proximate portion, the distal portion of the inner shaft forming an elongated cavity;

a clip slideably received in the cavity and having opposing jaws biased toward each other, the clip having a leading end facing the distal end of the inner shaft, the clip having a trailing end remote from the distal end of the inner shaft;

a pusher member slideably received in the inner shaft and having a distal portion fitted in the distal portion of the inner shaft and positioned to be proximate to the trailing end of the clip received in the cavity, the pusher member including a proximate portion extending to the proximate portion of the inner shaft, the pusher member being moveable lengthwise distally of the inner shaft for sliding the clip within the cavity; and

a clip opening component at the distal end of the inner shaft and adjacent to the distal end of the outer shaft, the opening component having at least one clip-wedging side piece with at least one wedge surface angled outward and in the path of the leading end of a clip for engagement between the jaws of the clip as the clip is moved distally by the pusher member so as to spread apart the jaws in opposition to force tending to bias the jaws of the clip toward each other, for moving the clip to and holding the clip in a loaded position in which the jaws project from the distal end of the outer shaft, the inner and outer shafts and the clip being constructed and arranged relatively to eject a clip distally from the loaded position by relative movement of the inner and outer shafts to free the clip from the opening component and apply a clamping force by inherent biasing of the clip jaws toward each other, and the inner and outer shafts being

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constructed and arranged to allow rotational movement of the inner shaft relative to the outer shaft for positioning of a clip received within the inner shaft.

2. (Original) The apparatus defined in Claim 1, including a row of identical clips received in the cavity and arranged end to end.

3. (New) The apparatus defined in Claim 2, in which each clip has an outward extending projection engageable against the distal portion of the outer shaft by relative movement of the outer shaft in a distal direction when such clip is in the loaded position to eject the clip from the inner shaft and the clip opening component.

4. (New) The apparatus defined in Claim 2, including means for indicating the positions of the clips lengthwise within the inner shaft.

5. (New) The apparatus defined in Claim 1, in which the clip has an outward extending projection engageable against the distal portion of the outer shaft by relative movement of the outer shaft in a distal direction when the clip is in the loaded position to eject the clip from the inner shaft and the clip opening component.

6. (New) An apparatus comprising:
an elongated tubular outer shaft having a distal portion and a proximate portion;
an elongated tubular inner shaft slideable inside the outer shaft and having a distal portion adjacent to the outer shaft distal portion and a proximate portion adjacent to the outer shaft proximate portion, the distal portion of the inner shaft forming an elongated cavity;
a clip slideably received in the cavity and having opposing jaws biased toward each other, the clip having a leading end facing the distal end of the inner shaft, the clip having a trailing end remote from the distal end of the inner shaft;

a pusher member slideably received in the inner shaft and having a distal portion fitted in the distal portion of the inner shaft and positioned to be proximate to the trailing end of the clip received in the cavity, the pusher member including a proximate portion extending to the proximate portion of the inner shaft, the pusher member being moveable lengthwise distally of the inner shaft for sliding the clip within the cavity;

a clip opening component at the distal end of the inner shaft and adjacent to the distal end of the outer shaft, the opening component having at least one clip-wedging side piece with at least one wedge surface angled outward and in the path of the leading end of a clip for engagement between the jaws of the clip as the clip is moved distally by the pusher member so as to spread apart the jaws in opposition to force tending to bias the jaws of the clip toward each other, for moving the clip to and holding the clip in a loaded position in which the jaws project from the distal end of the outer shaft, the inner and outer shafts and the clip being constructed and arranged relatively to eject a clip distally from the loaded position by relative movement of the inner and outer shafts to free the clip from the opening component and apply a clamping force by inherent biasing of the clip jaws toward each other, and the inner and outer shafts being constructed and arranged to allow rotational movement of the inner shaft relative to the outer shaft for positioning of a clip received within the inner shaft;

a handle having a proximate extension connected to the proximate portion of the inner shaft; and

a spool slideable along the proximate extension and connected to the pusher member for movement of the pusher member by manipulation of the spool.

7. (New) The apparatus defined in Claim 6, including a row of identical clips received in the cavity and arranged end to end.

8. (New) The apparatus defined in Claim 7, including means for indicating the positions of the clips lengthwise of the inner shaft.

9. (New) An apparatus comprising:

an elongated tubular outer shaft having a distal portion and a proximate portion;

an elongated tubular inner shaft slideable inside the outer shaft and having a distal portion adjacent to the outer shaft distal portion and a proximate portion adjacent to the outer shaft proximate portion, the distal portion of the inner shaft forming an elongated cavity;

a clip slideably received in the cavity and having opposing jaws biased toward each other, the clip having a leading end facing the distal end of the inner shaft, the clip having a trailing end remote from the distal end of the inner shaft;

a pusher member slideably received in the inner shaft and having a distal portion fitted in the distal portion of the inner shaft and positioned to be proximate to the trailing end of the clip received in the cavity, the pusher member including a proximate portion extending to the proximate portion of the inner shaft, the pusher member being moveable lengthwise distally of the inner shaft for sliding the clip within the cavity;

a clip opening component at the distal end of the inner shaft and adjacent to the distal end of the outer shaft, the opening component having at least one clip-wedging side piece with at least one wedge surface angled outward and in the path of the leading end of a clip for engagement between the jaws of the clip as the clip is moved distally by the pusher member so as to spread apart the jaws in opposition to force tending to bias the jaws of the clip toward each other, for moving the clip to and holding the clip in a loaded position in which the jaws project from the distal end of the outer shaft, the inner and outer shafts and the clip being constructed and arranged relatively to eject a clip distally from the loaded position by relative movement of the inner and outer shafts to free the clip from the opening component and apply a clamping

force by inherent biasing of the clip jaws toward each other, and the inner and outer shafts being constructed and arranged to allow rotational movement of the inner shaft relative to the outer shaft for positioning of a clip received within the inner shaft;

a handle having a proximate extension connected to the proximate portion of the inner shaft; and

a spool slideable along the proximate extension and connected to the outer shaft for movement of the outer shaft by manipulation of the spool.

10. (New) The apparatus defined in Claim 9, including a row of identical clips received in the cavity and arranged end to end.

11. (New) The apparatus defined in Claim 10, including means for indicating the positions of the clips lengthwise of the inner shaft.

12. (New) An apparatus comprising:

an elongated tubular outer shaft having a distal portion and a proximate portion;

an elongated tubular inner shaft slideable inside the outer shaft and having a distal portion adjacent to the outer shaft distal portion and a proximate portion adjacent to the outer shaft proximate portion, the distal portion of the inner shaft forming an elongated cavity;

a clip slideably received in the cavity and having opposing jaws biased toward each other, the clip having a leading end facing the distal end of the inner shaft, the clip having a trailing end remote from the distal end of the inner shaft;

a pusher member slideably received in the inner shaft and having a distal portion fitted in the distal portion of the inner shaft and positioned to be proximate to the trailing end of the clip received in the cavity, the pusher member including a proximate portion extending to the

proximate portion of the inner shaft, the pusher member being moveable lengthwise distally of the inner shaft for sliding the clip within the cavity;

a clip opening component at the distal end of the inner shaft and adjacent to the distal end of the outer shaft, the opening component having at least one clip-wedging side piece with at least one wedge surface angled outward and in the path of the leading end of a clip for engagement between the jaws of the clip as the clip is moved distally by the pusher member so as to spread apart the jaws in opposition to force tending to bias the jaws of the clip toward each other, for moving the clip to and holding the clip in a loaded position in which the jaws project from the distal end of the outer shaft, the inner and outer shafts and the clip being constructed and arranged relatively to eject a clip distally from the loaded position by relative movement of the inner and outer shafts to free the clip from the opening component and apply a clamping force by inherent biasing of the clip jaws toward each other, and the inner and outer shafts being constructed and arranged to allow rotational movement of the inner shaft relative to the outer shaft for positioning of a clip received within the inner shaft;

a handle having a proximate extension connected to the proximate portion of the inner shaft;

a spool mounted on the proximate extension; and

operating means mounted on the spool and connected to the pusher member for movement thereof.

13. (New) The apparatus defined in Claim 12, including a row of identical clips received in the cavity and arranged end to end.

14. (New) The apparatus defined in Claim 13, including means for indicating the positions of the clips lengthwise of the inner shaft.

15. (New) The apparatus defined in Claim 12, in which the operating means includes a slide moveable relative to the spool.

16. (New) The apparatus defined in Claim 15, including means for indicating the relative positions of the slide and the spool.

17. (New) The apparatus defined in Claim 12, in which the operating means includes a rotatable dial mounted on the spool.

18. (New) The apparatus defined in Claim 17, including means for indicating the relative positions of the rotatable dial and the spool.

19. (New) An apparatus comprising:
an elongated tubular outer shaft having a distal portion and a proximate portion;
an elongated tubular inner shaft slideable inside the outer shaft and having a distal portion adjacent to the outer shaft distal portion and a proximate portion adjacent to the outer shaft proximate portion, the distal portion of the inner shaft forming an elongated cavity;
a clip slideably received in the cavity and having opposing jaws biased toward each other, the clip having a leading end facing the distal end of the inner shaft, the clip having a trailing end remote from the distal end of the inner shaft;
a pusher member slideably received in the inner shaft and having a distal portion fitted in the distal portion of the inner shaft and positioned to be proximate to the trailing end of the clip received in the cavity, the pusher member including a proximate portion extending to the proximate portion of the inner shaft, the pusher member being moveable lengthwise distally of the inner shaft for sliding the clip within the cavity;

a clip opening component at the distal end of the inner shaft and adjacent to the distal end of the outer shaft, the opening component having at least one clip-wedging side piece with at least one wedge surface angled outward and in the path of the leading end of a clip for engagement between the jaws of the clip as the clip is moved distally by the pusher member so as to spread apart the jaws in opposition to force tending to bias the jaws of the clip toward each other, for moving the clip to and holding the clip in a loaded position in which the jaws project from the distal end of the outer shaft, the inner and outer shafts and the clip being constructed and arranged relatively to eject a clip distally from the loaded position by relative movement of the inner and outer shafts to free the clip from the opening component and apply a clamping force by inherent biasing of the clip jaws toward each other; and

means for indicating the position of the clip lengthwise within the inner shaft.

20. (New) The apparatus defined in Claim 19, including a row of identical clips received in the cavity and arranged end to end.

21. (New) The apparatus defined in Claim 19, in which the clip has an outward extending projection engageable against the distal portion of the outer shaft by relative movement of the outer shaft in a distal direction when the clip is in the loaded position to eject the clip from the inner shaft and the clip opening component.

22. (New) An apparatus comprising:
an elongated tubular outer shaft having a distal portion and a proximate portion;
an elongated tubular inner shaft slideable inside the outer shaft and having a distal portion adjacent to the outer shaft distal portion and a proximate portion adjacent to the outer shaft proximate portion, the distal portion of the inner shaft forming an elongated cavity;

a clip slideably received in the cavity and having opposing jaws biased toward each other, the clip having a leading end facing the distal end of the inner shaft, the clip having a trailing end remote from the distal end of the inner shaft;

a pusher member slideably received in the inner shaft and having a distal portion fitted in the distal portion of the inner shaft and positioned to be proximate to the trailing end of the clip received in the cavity, the pusher member including a proximate portion extending to the proximate portion of the inner shaft, the pusher member being moveable lengthwise distally of the inner shaft for sliding the clip within the cavity;

a clip opening component at the distal end of the inner shaft and adjacent to the distal end of the outer shaft, the opening component having at least one clip-wedging side piece with at least one wedge surface angled outward and in the path of the leading end of a clip for engagement between the jaws of the clip as the clip is moved distally by the pusher member so as to spread apart the jaws in opposition to force tending to bias the jaws of the clip toward each other, for moving the clip to and holding the clip in a loaded position in which the jaws project from the distal end of the outer shaft, the inner and outer shafts and the clip being constructed and arranged relatively to eject a clip distally from the loaded position by relative movement of the inner and outer shafts to free the clip from the opening component and apply a clamping force by inherent biasing of the clip jaws toward each other;

a handle having a proximate extension connected to the proximate portion of the inner shaft;

a spool slideable along the proximate extension and connected to the pusher member for movement of the pusher member by manipulation of the spool; and

means for indicating the position of the clip lengthwise within the inner shaft.

23. (New) The apparatus defined in Claim 22, including a row of identical clips received in the cavity and arranged end to end.

24. (New) An apparatus comprising:

an elongated tubular outer shaft having a distal portion and a proximate portion;

an elongated tubular inner shaft slideable inside the outer shaft and having a distal portion adjacent to the outer shaft distal portion and a proximate portion adjacent to the outer shaft proximate portion, the distal portion of the inner shaft forming an elongated cavity;

a clip slideably received in the cavity and having opposing jaws biased toward each other, the clip having a leading end facing the distal end of the inner shaft, the clip having a trailing end remote from the distal end of the inner shaft;

a pusher member slideably received in the inner shaft and having a distal portion fitted in the distal portion of the inner shaft and positioned to be proximate to the trailing end of the clip received in the cavity, the pusher member including a proximate portion extending to the proximate portion of the inner shaft, the pusher member being moveable lengthwise distally of the inner shaft for sliding the clip within the cavity;

a clip opening component at the distal end of the inner shaft and adjacent to the distal end of the outer shaft, the opening component having at least one clip-wedging side piece with at least one wedge surface angled outward and in the path of the leading end of a clip for engagement between the jaws of the clip as the clip is moved distally by the pusher member so as to spread apart the jaws in opposition to force tending to bias the jaws of the clip toward each other, for moving the clip to and holding the clip in a loaded position in which the jaws project from the distal end of the outer shaft, the inner and outer shafts and the clip being constructed and arranged relatively to eject a clip distally from the loaded position by relative movement of

the inner and outer shafts to free the clip from the opening component and apply a clamping force by inherent biasing of the clip jaws toward each other;

a handle having a proximate extension connected to the proximate portion of the inner shaft;

a spool slideable along the proximate extension and connected to the outer shaft for movement of the outer shaft by manipulation of the spool; and

means for indicating the position of the clip lengthwise within the inner shaft.

25. (New) The apparatus defined in Claim 24, including a row of identical clips received in the cavity and arranged end to end.

26. (New) An apparatus comprising:

an elongated tubular outer shaft having a distal portion and a proximate portion;

an elongated tubular inner shaft slideable inside the outer shaft and having a distal portion adjacent to the outer shaft distal portion and a proximate portion adjacent to the outer shaft proximate portion, the distal portion of the inner shaft forming an elongated cavity;

a clip slideably received in the cavity and having opposing jaws biased toward each other, the clip having a leading end facing the distal end of the inner shaft, the clip having a trailing end remote from the distal end of the inner shaft;

a pusher member slideably received in the inner shaft and having a distal portion fitted in the distal portion of the inner shaft and positioned to be proximate to the trailing end of the clip received in the cavity, the pusher member including a proximate portion extending to the proximate portion of the inner shaft, the pusher member being moveable lengthwise distally of the inner shaft for sliding the clip within the cavity;

a clip opening component at the distal end of the inner shaft and adjacent to the distal end of the outer shaft, the opening component having at least one clip-wedging side piece with at least one wedge surface angled outward and in the path of the leading end of a clip for engagement between the jaws of the clip as the clip is moved distally by the pusher member so as to spread apart the jaws in opposition to force tending to bias the jaws of the clip toward each other, for moving the clip to and holding the clip in a loaded position in which the jaws project from the distal end of the outer shaft, the inner and outer shafts and the clip being constructed and arranged relatively to eject a clip distally from the loaded position by relative movement of the inner and outer shafts to free the clip from the opening component and apply a clamping force by inherent biasing of the clip jaws toward each other;

a handle having a proximate extension connected to the proximate portion of the inner shaft;

a spool mounted on the proximate extension;

operating means mounted on the spool and connected to the pusher member for movement thereof; and

means for indicating the position of the clip lengthwise within the inner shaft.

27. (New) The apparatus defined in Claim 26, including a row of identical clips received in the cavity and arranged end to end.

28. (New) The apparatus defined in Claim 26, in which the operating means includes a slide moveable relative to the spool.

29. (New) The apparatus defined in Claim 28, in which the indicating means includes means for indicating the relative positions of the slide and the spool.

30. (New) The apparatus defined in Claim 26, in which the operating means includes a rotatable dial mounted on the spool.

31. (New) The apparatus defined in Claim 30, in which the indicating means includes means for indicating the relative positions of the rotatable dial and the spool.

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